



University of Alberta  
Edmonton

Computing and Network Services

# Dispatch

May/June 2002

Akil Pessoa,  
CNS Oracle  
Technical  
Support

## CNS Database Services in High Demand 2

The CNS Strategic  
Business Plan 5

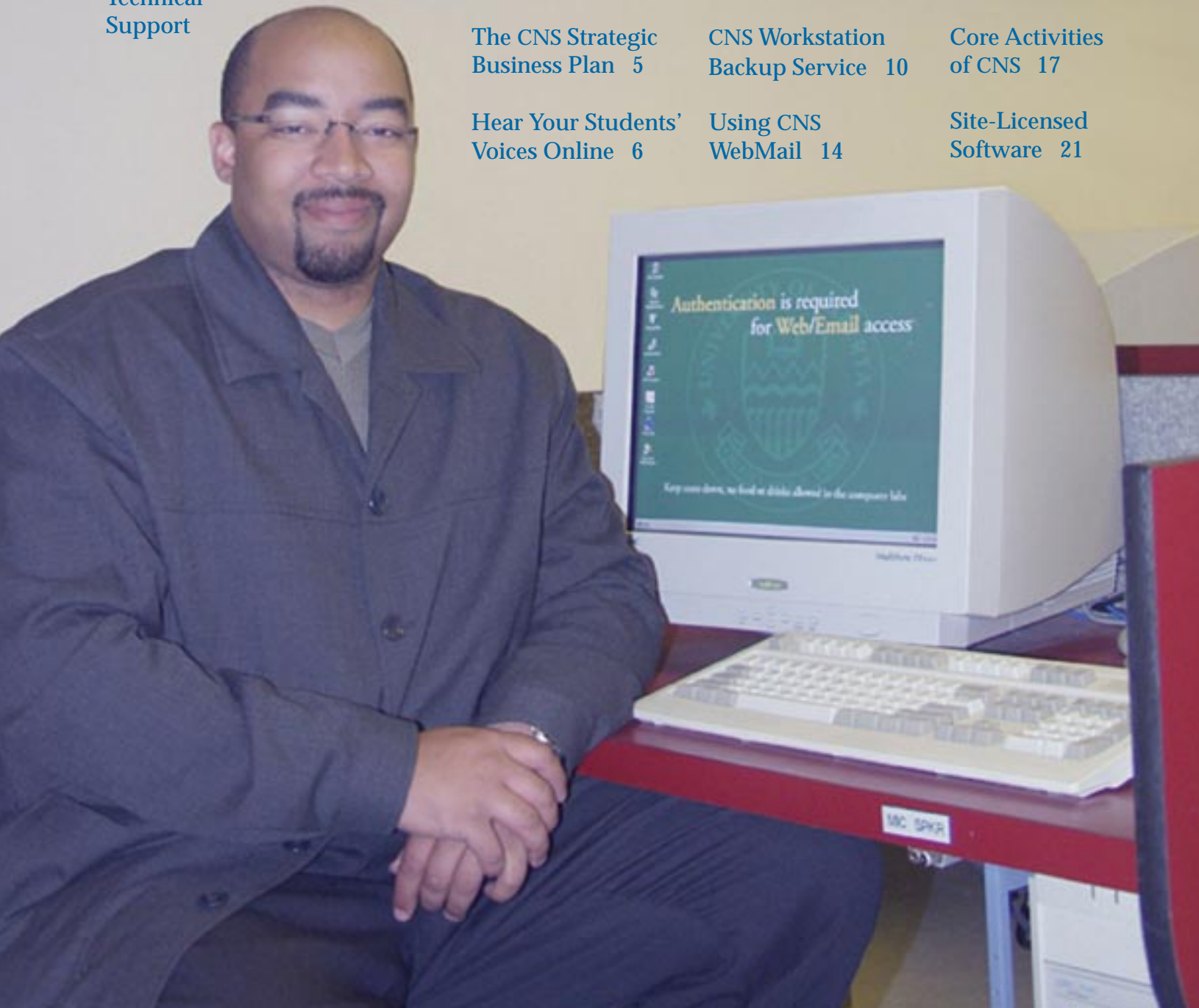
CNS Workstation  
Backup Service 10

Core Activities  
of CNS 17

Hear Your Students'  
Voices Online 6

Using CNS  
WebMail 14

Site-Licensed  
Software 21



## In this Issue

CNS Database Services in High Demand	2
Using the Proxy Server to Access Licensed Internet Content	4
The CNS Strategic Business Plan	5
Hear Your Students' Voices Online	6
Strategic Vision for CNS Clients	8
CNS Workstation Backup Service	10
Using CNS WebMail	14
Web Page Policies at the U of A	16
Core Activities of CNS	17
CNS Site-Licensed Software	21
Cyber-Plagiarism Guide for Faculty	29

## E-Mail Addresses

E-mail that is sent to CNS-provided accounts goes to *CNS-ID@ualberta.ca*. Many University faculty and staff can also be reached at *firstname.lastname@ualberta.ca*.

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## CNS Database Services in High Demand

*Sean Hartigan* (sean.hartigan@ualberta.ca)  
CNS Client Services

“Life is good,” says Akil Pessoa, team leader of the CNS Oracle Technical Support Group.

Pessoa has reason to be happy. In the past two years, his group has more than tripled in size. This remarkable growth, says Pessoa, is the product of careful planning and a team dedicated to meeting the database computing needs of campus clients at the University of Alberta.

In 1999, the group had only three staff members, and a vision of supplying a “huge unmet demand” for database services on campus. Now the group has a staff of ten, and an ever-growing array of test and production servers in the General Services Building.

### Broad Range of Services

Pessoa has been going to a lot of meetings lately. Demand for the group’s services is high, he says.

These services come in three broad categories. The first is general IT consulting. This involves conducting business process analyses, advising on RFP processes, and helping clients acquire new technology or products.

The second category is software development work. This can be sub-divided into application and database work.

On the application side, the group’s programmers develop and maintain everything from large-scale client-server Oracle applications to web-based Java servlets.

“Our work here really runs the gamut,” says Pessoa.

On the database side, the group develops, administers, and maintains Oracle database systems.

“Basically, we do everything that’s large, complex, and not PeopleSoft,” says Pessoa.

The mandate may sound broad, but the group is equipped to handle it, Pessoa says.

“People will call us and say, ‘We don’t have a database infrastructure.’ We can set them up with hardware, operating systems, primary application layers, security and connectivity.”

The group can also host both locally developed and commercially developed applications, providing upgrading, updating, and maintenance services.

“We provide 24 by 7 monitoring and consistent uptime,” says Pessoa.

On top of all this, the group also provides system administration services for its clients and for CNS itself. For example, the group manages the CNS Campus Computing ID service and the database underlying the Optical Mark Reading system.

The group’s internal CNS work is core-funded, says Pessoa, but all other funding comes from client revenue. This mixed funding model forces the group to be responsive to client needs.

“We know that everyday we go out there and represent ourselves, and if we don’t do it well, it will affect our bottom line,” he says.

### **Rehab Med Database Project**

Luanne McFarlane of the Faculty of Rehabilitation Medicine testifies to the Oracle Group’s commitment to client satisfaction.

Rehab Med wanted to integrate the three database systems (one for

each department in the Faculty) that handled its student work-placement program. The program manages the training placements of approximately 600 students with 600 to 1,000 clinicians across the country.

“The Oracle Technical Support Group was recommended to us by other campus sources,” says McFarlane. At first, though, the group’s meticulous methods gave the staff at Rehab Med some pause.

“They spent months figuring out in great detail how we do our jobs,” she says. “It was a huge time investment.”

This kind of detailed research is an important part of the group’s development process, Pessoa says. Before writing a single line of code or recommending a single purchase, the group conducts a series of meetings and JAD (Joint Application Design) sessions to make sure they have a thorough understanding of the client’s business process.

“Our philosophy is that technology follows the business,” says Pessoa. “You only need as much technology as it takes to do the job.”

McFarlane says that despite her initial doubts, she is now convinced the time invested in research was justified.

“They did all the work,” she says, “and they really helped us understand our own business process and get rid of some of our inefficiencies. For example, we were entering some data into the database three times.”

“An outside agency we consulted on the same project spent forty-five

minutes talking to us and then told us what they thought we needed,” she adds. “In the long run, this was much better.”

### **Mini-Deliverables**

The new database system was delivered to Rehab Med in a series of self-contained modules, each of which was tested before the next was delivered.

Pessoa calls these modules “mini-deliverables.”

“We break the development process into logical chunks,” he says. “Every week or two the client gets something new to test.”

A second programming crew makes changes to tested modules while the first proceeds with work on the next.

“We can adjust very quickly to client feedback this way,” says Pessoa.

McFarlane says her staff were very pleased with this model of development.

“They came and talked with us and gave us ideas for testing each module,” she says. “It let us learn the system in bits.”

She says her staff found this much better than trying to learn a completed system all at once.

“Everyone using the system had a hand in designing it,” she says. “That’s a real treat.”

McFarlane says Rehab Med signed off on the completed system (now hosted on the group’s production

servers) in May. The entire development process, from first meeting to completion, took about a year. The technical development part of the project lasted about four months.

The Faculty is “really pleased and excited” with the end result, MacFarlane says. The new system will not only streamline existing processes, but will also make it easier for the Faculty to stay in touch with its hundreds of clinician associates.

“The new system allows us to present a much more organized and efficient image to the community,” she says. “Our records are accurate and our communications are more efficient.”

The final step will be the web-enabling of the Faculty’s database system. The Oracle Technical Support Group will be handling this as well, she says.

The cost for the entire procedure was “very competitive,” McFarlane says, “and we got better value for the money we spent.” The first year of trouble-shooting was also included in the initial price. “This is something the others were not prepared to offer, she says.

### Advice for Future Clients

McFarlane’s enthusiasm seems to explain the Oracle Technical Support Group’s dynamic growth.

“They were really fun to deal with. I never once felt dumb,” she says.

But she has some advice for future clients: be patient during the early phases of the process.

“Keep in mind where it’s going,” she says. “I didn’t realize how

complicated the entire process would be. I’m not sure I would even have understood it in the beginning.”

But the group’s systematic and thorough approach “definitely paid off 100 percent,” she says. “And all of us here would say that.” □

## Using the Proxy Server to Access Licensed Internet Content

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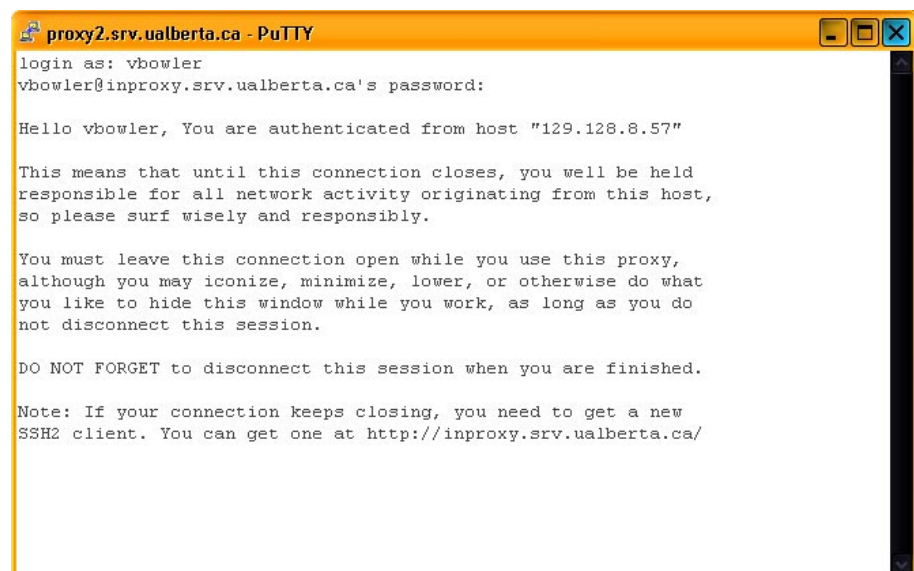
### *CNS Client Services*

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Some categories of website content at the University of Alberta have been purchased from commercial companies under licensing restrictions. These restrictions stipulate

that the content may only be accessed by University members such as staff and students. For example, the CNS-provided news-group service and many of the University Libraries’ web-enabled databases and academic journals are set up this way.

Accessing restricted websites, newsgroups and databases does not normally pose any problems if you are connecting from a computer on campus because these computers are all in the ualberta.ca domain, which is licensed to view the content. However, if you are trying to access the same sites from home or another remote location, using an off-campus Internet Service Provider such as Telus or Shaw, you will first need to authenticate yourself as a legitimate University member. You do this by establishing a connection with the CNS proxy server using your CNS Campus Computing ID and password, which then gives you access to restricted University resources as if you were sitting in front of a computer on campus.



```
proxy2.srv.ualberta.ca - PuTTY
login as: vbowler
vbowler@inproxy.srv.ualberta.ca's password:

Hello vbowler, You are authenticated from host "129.128.8.57"

This means that until this connection closes, you will be held
responsible for all network activity originating from this host,
so please surf wisely and responsibly.

You must leave this connection open while you use this proxy,
although you may iconize, minimize, lower, or otherwise do what
you like to hide this window while you work, as long as you do
not disconnect this session.

DO NOT FORGET to disconnect this session when you are finished.

Note: If your connection keeps closing, you need to get a new
SSH2 client. You can get one at http://inproxy.srv.ualberta.ca/
```

A session with the CNS proxy server has been successfully established.

CNS recently upgraded the proxy server service to address the previous less-than-satisfactory situation where the user had to re-authenticate with the server every thirty minutes. Under the new service, the user only needs to authenticate with the proxy server once for the entire session, no matter how long it is.

There are two steps you need to take in order to use the new proxy server:

1. Authenticate yourself with the server ([inproxy.srv.ualberta.ca](http://inproxy.srv.ualberta.ca)) using your CNS Campus Computing ID and password. You do this with a Telnet terminal emulation program that supports ssh (secure shell) connections.
2. Configure your web browser to use the proxy server.

Complete user instructions for these two steps are available from the following CNS website:

[www.ualberta.ca/help/www/authenticating.html](http://www.ualberta.ca/help/www/authenticating.html)

This website includes:

- links for downloading Telnet programs that support ssh;
- procedures for using ssh programs with Windows, Macintosh, and Unix systems;
- procedures for setting up various web browser versions to use the proxy server under different connection scenarios (i.e., dial-up modems, cable modems, LANs and ADSL);
- a discussion of extra steps to take when connecting to the proxy server through a firewall. □

## The CNS Strategic Business Plan

*CNS Management Team*

*Note:* This article is an excerpt from the *CNS Four-Year Strategic Business Plan*. The full 55-page plan, including a resource plan, an annual budget and three-year forecasts, is available as a PDF file at:

[www.ualberta.ca/cns/planning/business-plan.pdf](http://www.ualberta.ca/cns/planning/business-plan.pdf)

Information and communications technologies (ICT) have moved from the back room to center stage at the University of Alberta. This is due to the growing realization that without a first rate 'infostructure,' the far-reaching vision of the institution will not be attainable. The community is changing. The best and brightest students and faculty will be attracted to centers of higher learning that provide leading-edge technology solutions.

CNS, (in partnership with other campus IT professionals, clients and strategic partners) is a key underpinning of the technology-enabled fabric of the University of Alberta. CNS provides key services which support the day-to-day needs of clients while striving to realize a vision that addresses the goals and aspirations of all the constituencies that we serve. Our operating values are very much aligned with those of Facilities and Operations. We are first and foremost a service department, with the goal of being a partner with our clients.

The core services provided by CNS are wide and broadening as applications and content converge. For years it has been clear that separating out the technical roles in an information systems environment does not produce better solutions.

Indeed it was a major cause of the systems disasters of the past where what was delivered by the programmers bore only a passing resemblance to the product which the client expected. CNS success has been achieved by recognizing this. We have recruited and developed staff who can communicate effectively with our client base.

This success has led to national and international recognition for areas in which CNS has excelled. It is no coincidence that many of these areas have been joint efforts with our client partners. This record of excellence extends beyond the technical. CNS staff chair multi-institutional strategy committees and sit on boards and prestigious task forces. This reflects the commitment to leadership which is essential in a field where strategic policy is an essential element of successful systems architecture. It is also a good indicator of the esteem in which these professionals are held by their peers.

The University of Alberta's information systems environment is complex and expensive. Significant expenditures are required to sustain the existing hardware and software. The systems infrastructure of the University can be likened to a tree where leaves (representing hardware, software and expertise) sprout rapidly—but autumn never arrives. This complexity leads to greater management challenges and probability of failure.

Additional funds are needed to implement new initiatives which add functionality, optimize services or consolidate capability for future efficiencies. Priority items (beyond sustaining funding), which are most critical to delivering our services and leadership are:

- adequate commercial Internet bandwidth and redundant Internet service
- desktop security
- adequate funding of public computing labs support
- creating a mirrored environment for non-academic constituents
- creating a common calendaring system
- resourcing the E-Learning Center of Excellence

Please take a look at the other excerpts from the *CNS Four-Year Strategic Business Plan* that are highlighted in this issue of *Dispatch*. Feedback is welcome, and may be directed to the CNS Manager of Technology Planning and Budgets:

stephen.thornton@ualberta.ca □

## Hear Your Students' Voices Online

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Faculty of Arts Technologies for Learning Center

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What comes to your mind when you think of having an online conversation? Probably typing out your message in an e-mail or posting it to an electronic discussion forum. Text-based e-mail and computer conferencing allow us to communicate asynchronously—thus conveniently—but they also silence our voices.

To most people, talking online means typing. Undoubtedly, this communication technology provides advantages when combined with classroom teaching. For instance, class discussion expands beyond the face-to-face meeting; students have more time to think critically and respond to both teachers' and classmates' comments.

Tools such as WebCT and WebBoard, available on U of A campus, have the e-mail and discussion functionalities to facilitate communication with text. But, what if you want your students to really "speak," not just type out a message on a keyboard? These text-based communication tools are then seen to be limited in accommo-

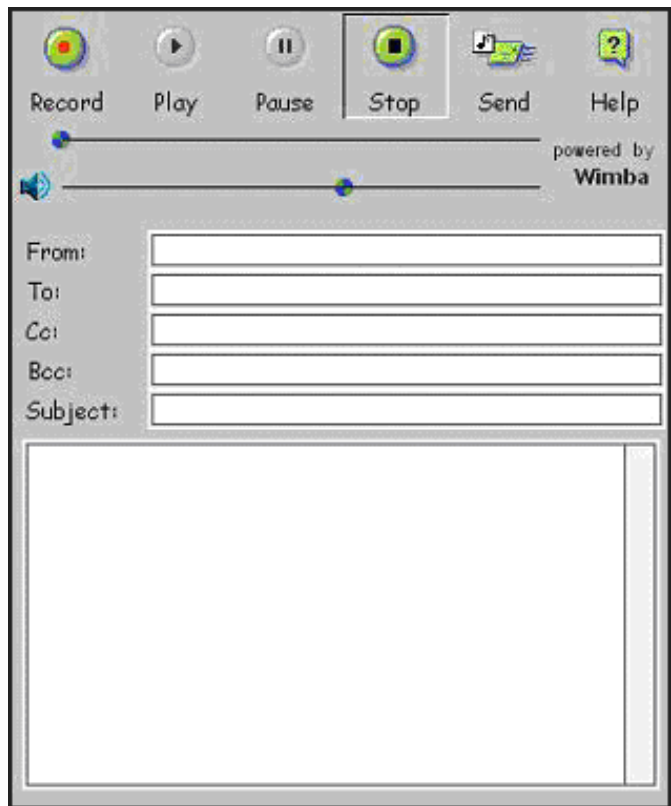


Figure 1 - Wimba's voice e-mail applet.

dating the pedagogical goals of some teachers whose subject areas require vocal input from students: subjects such as languages, poetry, performance, etc. Can you have the advantages of asynchronicity yet hear your students' voices online?

In the summer of 2001, the Faculty of Arts Technologies for Learning Center (Arts TLC) collaborated with the Language Resource Center to find a solution for incorporating voice in an online discussion forum. Together we implemented the Wimba voice conferencing system. Wimba consists of two components: Wimba voice e-mail and the Wimba voice board. Both are available for Faculty of Arts teaching staff.

### Wimba Voice E-Mail

Wimba is used within a web browser (Netscape or Internet Explorer). The voice e-mail applet (Figure 1) allows users to record a message by speaking into a microphone connected to a computer. In essence, Wimba embeds your voice message in an e-mail and sends it over the Internet.

## Wimba Voice Board

Unlike voice e-mail, which is designed for one-on-one communication, the voice board is used to facilitate many-to-many communications (Figure 2). Voice board is an ideal tool for class discussion or assignments. It is very similar to text-based conferencing programs where postings are archived chronologically and threaded according to subject lines. Everyone can participate in this forum by recording and listening to messages.

## Technology Requirements

Wimba software needs to be installed on a server running Windows NT, Linux, or Solaris. The minimum requirement of the server is 5 GB of storage and 256 MB of RAM.

To use Wimba as an end-user, you need a PC or Macintosh computer with an Internet connection and a web browser. A Java plug-in is downloaded and installed automatically so there is no need to pre-install a client program.

Here are some other specific technical requirements:

- Sound card, microphone and speakers
- Internet connection (28K modem is sufficient)
- Netscape 4+ or Internet Explorer 5+

An important feature of Wimba is its streaming technology. Wimba streams the messages from the Wimba server to end-users as well as from end-users to the server. With its proprietary protocol that runs over TCP, Wimba streaming technology allows voice transmission over lower-speed Internet connections. This streaming process takes place during the listening (downloading messages from the server) and recording (sending messages to the server). Users do not experience delay when listening to a message; nor do they have to wait to upload their recording.

Another advantage of Wimba is the flexibility of integrating it into web pages. When creating a voice e-mail applet or a voice board, you have access to the Java and HTML codes pertaining to that applet or board. By copying and pasting these codes into a web page, you incorporate Wimba into your web page and you can add text, images, and web links—virtually any design and editing you can do with a regular web page. In other words, you are able to create your own design around the Wimba tools.

By the same token, it is easy to include Wimba in a WebCT course: posting a single web page will do the trick.

To see an excellent example of web design around a Wimba voice board, go to the International Voice Website at:

[http://ihome.ust.hk/~lcjohn/International\\_Voice.htm](http://ihome.ust.hk/~lcjohn/International_Voice.htm)

## Wimba in Action

Wimba has been in use at the Faculty of Arts for about a year. Teachers are experimenting with it to fully capitalize on its instructional benefits. More than ten courses were using Wimba in Winter 2002 and the number will increase during the next term. We have had positive reactions from both teachers and students. They all thought Wimba was very easy to set up and easy to use.

Last term, an instructor used Wimba voice boards in her Intermediate Japanese course. Each student was required to complete two assignments using Wimba: they were to read and record an excerpt from a text and one from their own writing. The instructor listened to all students' recordings on her computer and recorded her

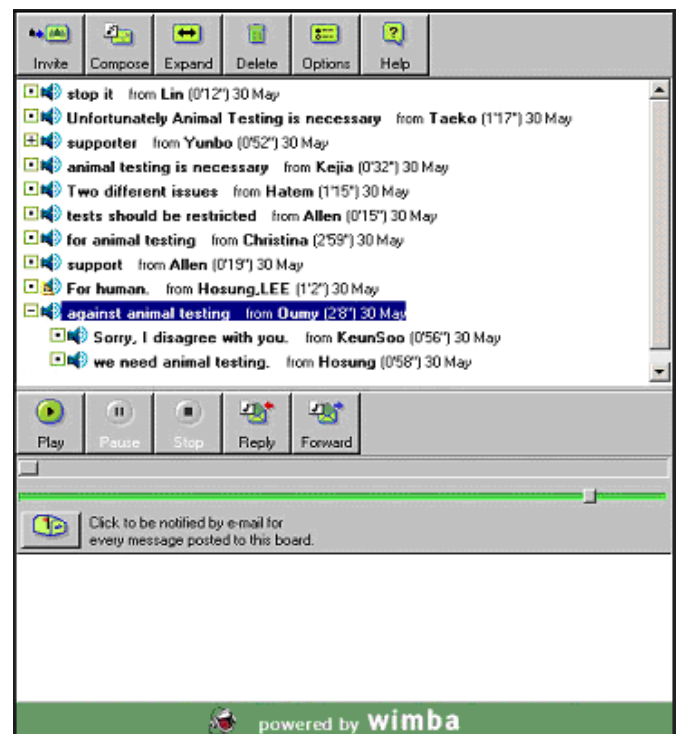


Figure 2 - Wimba's voice board.

### Wimba Highlights

- Wimba is an asynchronous voice conferencing program.
- Wimba voice e-mail and Wimba voice board run within a web browser and do not demand storage space on a user's computer.
- Wimba compresses and streams voice recordings to and from a server; thus it maintains good sound quality yet allows fast transfer on the Internet.
- Wimba can be easily incorporated into a web page or a WebCT site.
- The Arts TLC can currently support up to 200 users with its licence for 20 Wimba streams.

feedback to them online. The instructor was very pleased with the convenience Wimba offered—no more collecting tapes from students, rewinding or fast forwarding. Students also appreciated the opportunity to practice their speaking skills and the individual attention they received from the instructor. Here are some of their comments:

- “I really liked Wimba. It's one-on-one but you have the freedom of doing it on your own time.”
- “It's not as nerve-racking as speaking in class.”
- “In classes with 20 or more people, it gives you a chance to get one-on-one feedback and hear what other students have to say.”
- “You can repeat the recording as often as you want, so if you don't catch it the first time you can go back and listen again.”

Other instructors also used Wimba creatively. Their strategies included:

- Language students used Wimba voice e-mail to submit speaking quizzes.
- Students conducted a debate, posting their 'for-and-against' arguments on Wimba.
- An instructor posted questions on Wimba, asking students to respond.
- Students recited poems and conducted discussions on Wimba.

So, talking online no longer means just typing on a keyboard! You can speak with your own voice. Not only is it more personal, but it adds instructional values to many subject areas that require verbal communication.

You can try Wimba e-mail and Wimba voice board at:

[www.humanities.ualberta.ca/tlc](http://www.humanities.ualberta.ca/tlc)

At the above site, look at the article called “Hear your Students' Voices Online.”

For more information about Wimba products, visit:

<http://www.wimba.com>

As well, if you have questions or comments, please contact me via e-mail. □

## Strategic Vision for CNS Clients

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*CNS Management Team*

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*Note:* This article is an excerpt from the *CNS Four-Year Strategic Business Plan*. The full 55-page plan, including a resource plan, an annual budget and three-year forecasts, is available as a PDF file at: [www.ualberta.ca/cns/planning/business-plan.pdf](http://www.ualberta.ca/cns/planning/business-plan.pdf)

CNS will create an information and communications technology (ICT) environment which will promote the concept of a technology-enabled campus, working as a partner with all constituents of the campus whenever possible. Acting as an agent of the University, CNS will broaden its sphere of influence to enable the University to be provincially and nationally recognized as a leader in the use and support of ICT.

Consistent with the modern concept of ICT departments, CNS will operate beyond the physical infrastructure, consulting on issues of information management such as standards, security, digital archiving and business continuity. This reflects the evolving role of information systems professionals over the past three decades, as management leaders and thinkers have recognized (via Total Quality Management and systems theory) that knowledge work does not yield well to the industrial decomposition thinking of Frederick W. Taylor. Understanding the whole problem is more likely to result in better solutions for clients from knowledge workers.



ICT provides opportunities for people to access and use information in different ways. At the University of Alberta, CNS will play a major role in realizing the advantages. Clearly the University's long-term goal has to be the creation of an effective learning and research organization.

From the perspective of each of the constituencies at the U of A, what might the ideal technology-enabled institution of 2005 look like?

### U of A Students

- Most aspects of student life will be enabled online.
- Students will have the ability to file applications, see their admissions finalized, plan their courses and register online.
- Students will access all of their course material online—quickly, reliably and easily.
- Prospective students will be able to 'test drive' the online learning environment as an aid to choosing their institution.
- Assignments and projects will be submitted electronically to the instructor.
- Students will have the choice of communicating online or coordinating meetings with peers, faculty and administration.
- Comprehensive digital repositories—local and worldwide—will be available to students online.
- Geographical location of students will be of less significance so that students will be able to continue studies from home or abroad.
- Students will have access to a variety of specialized software tools and help resources for these tools.
- Students will be able to monitor online progress toward their degrees and post questions to faculty and administration.
- Students will collaborate on group assignments without necessarily meeting face-to-face.
- Students will have ubiquitous access to the campus network using University or personal computing/communication devices in classrooms, labs, residence, and public study areas.

### Academic Staff

- Instructors will have all of their course material online in a robust and accessible production-quality environment.
- The course material and the environment will be a showcase and subject to review.
- Professors will be able to utilize a range of technolo-

gies to enhance the learning environment.

- Since the instructional content forms much of the asset base of the University, there will be total flexibility, allowing instructors to subscribe to the knowledge repository's materials to facilitate the dissemination of new knowledge.
- Instructors will be able (subject to GFC policy) to trace student history online, accept and respond to questions, debate issues and evaluate work electronically.
- Instructors will have full confidence in the archiving and protection of their digital material.
- Instructors will contribute actively to the knowledge repository of the institution. This contribution will be evaluated. The knowledge repository will be accessible by all constituencies of the University.
- Professors will be able to reliably and easily communicate electronically with peers and organizations within and beyond the University boundaries.
- Researchers will have access to an unparalleled set of digital resources for research purposes. This will include data and software for primary data acquisition, secondary data collection, analysis, simulation, visualization, reporting, and communication.
- It will be commonplace, via the communications infrastructure, to rapidly publish and share results with peers.
- All resources will be accessible via a robust, high-speed communications and computing infrastructure that is transparently linked to other institutions and organizations worldwide.

### Managers and Administrators

- Administrators will have online access to all financial, human resources and instructional information for which access is authorized.
- A flexible infrastructure will enable process improvements to be implemented with ease.
- Senior executives will be able to electronically communicate direction and progress to the University as a whole as well as to external stakeholders.
- Information systems will facilitate the synthesis of data to produce information and understanding.

### Affiliates

- Affiliates, organizations and individuals will access many of the digital resources of the University for research purposes.
- A separate environment will operate to facilitate a clean division between academic and other activities,

thereby avoiding confusion over commercial licensing and restricted database access.

- This environment will operate as a cost-recovery center, offering services at competitive rates. Affiliates will be able to use the environment to communicate with other agencies.

### Vendors

- Authorized University agents will communicate electronically with vendors for e-commerce purposes.
- All approved vendors will be e-commerce capable and will be tightly integrated with the enterprise corporate applications.
- All strategic vendors will share their strategic direction with the University.

### Partners

- Partners will be selected for their strategic fit and their willingness to share risk vis-à-vis our ICT architecture.
- Partners will have access to the University community for research and piloting purposes, and the University community will have access to the partners' equipment and services.

### Alumni

- Alumni of the University of Alberta will remain in a lifelong relationship with this institution.
- In an age where information becomes obsolete quickly, it is probable that alumni will require re-training, additional education, or professional development.
- The University will remain in contact with and provide ICT-enabled services to alumni in the spirit of continuing community development.

### Community

- The community supported by the University's ICT infrastructure will expand at a pace not seen before.
- Key areas of software licensing and systems and infrastructure support will be developed wherever economies of scale can be found.
- Provincial, national, and international strategies and protocols will be established to support distributed teaching models utilizing industrial strength servers and services.

- Digital data, including digital text, images, multimedia, visualizations, public domain software, site-licensed software and commercial research content will be available from secure and accessible sites.
- Supporting the concept "Campus Alberta," all students will have access to e-mail and a unified provincial computing ID system in partnership with post-secondary institutions and Alberta Learning.
- In support of research initiatives such as MACI, academic researchers in Canada will benefit from access to the University's world-class high-performance computing facility. □

## CNS Workstation Backup Service

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CNS Client Services

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CNS offers a workstation backup service to University employees that uses the Tivoli Storage Manager (TSM) client/server software from IBM. TSM client software comes in versions for various Windows and Mac operating systems and for a range of Unix flavors.

The TSM server is housed in the General Services Building computer center. Workstation files are backed up nightly over the campus network to an intermediate storage pool of hard disks; after a certain period of time, the workstation files are backed up to tape with the CNS tape robot facilities and one tape copy is moved to off-site storage (to cover the remote possibility of a disaster recovery situation).

Using a TSM client, automated backups of your workstation can be performed on a regular basis or you can perform manual backups and restores. Because the strong suit of TSM is automation, automated backups are recommended as they practically eliminate all human intervention.

We all know that making regular backups of workstation files is the smart thing to do, but actually doing it manually, for example with zip disks or other periph-

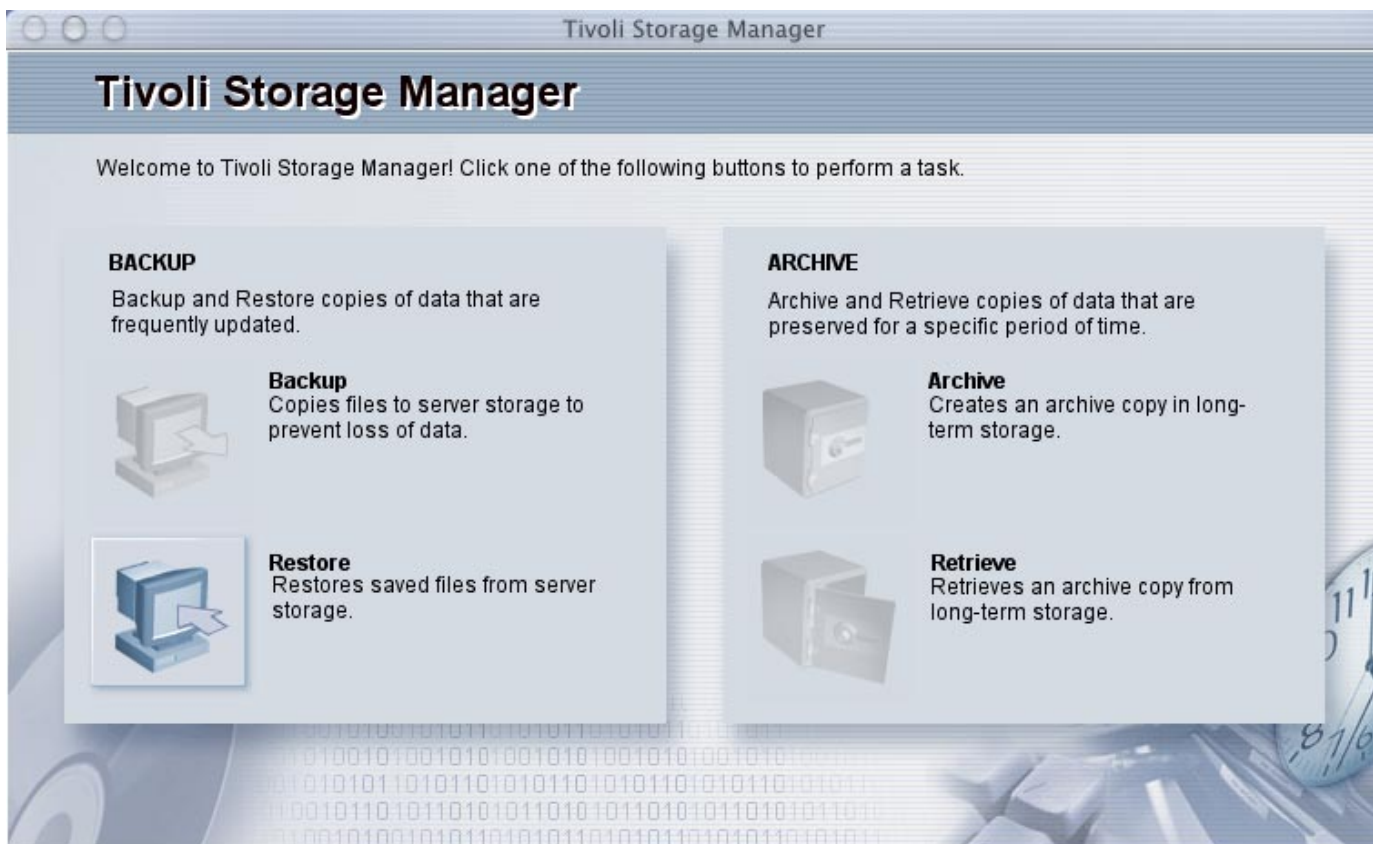


Figure 1 - The TSM client program for Mac OS X.

eral storage technologies, can be very time-consuming and tedious. Why not let TSM worry about the integrity of your digital projects during the time you are away from the office?

The annual fee for backing up a workstation with the CNS service (payable by indent only) is quite modest considering what is at stake. For \$290 per year you can store up to 120 gigabytes of data; for \$515 you can backup up to 240 gigabytes.

### Backup Storage Policy

TSM treats your workstation files as active or inactive versions. The server software also differentiates between files that are currently on your workstation and those that have been deleted from your workstation since the previous backup.

The active version of a file—of which there is only one—is the most current backed up version of an existing workstation file. Other versions of a file on the TSM server are tagged as inactive.

Under these parameters, the CNS TSM administrators have established the following workstation backup storage policy:

- A maximum of two backup versions are retained on the TSM server for files that currently exist on the workstation: the newest version is active and the oldest version is inactive.
- The active version of a backup file becomes inactive when the file is changed on the workstation and is backed up again to the TSM server.
- Inactive versions of files are deleted after thirty days.
- One backup version is retained for files that have been deleted from the workstation. These files are deleted after sixty days.

### Getting Started with TSM

1. *Subscribe to the CNS backup service.*

To subscribe to the CNS backup service, you must be a University of Alberta faculty/staff member with a CNS Campus Computing ID. You must fill out and return a *TSM Registration Form* to the TSM ID Admin-

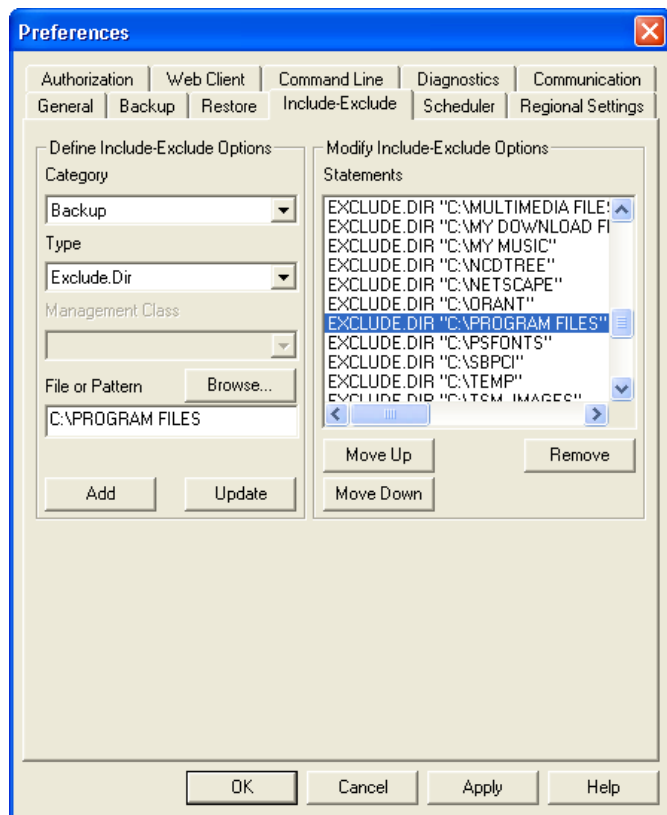


Figure 2 - The TSM client's Include-Exclude tool lets you refine your workstation backup.

istrator. The PDF form is available for downloading from the CNS Backup Service website at:

[www.ualberta.ca/cns/backup](http://www.ualberta.ca/cns/backup)

Together with your indent for payment, you can deliver your registration form in person to 302 General Services Building or you can use campus mail to deliver your paperwork to the ID Administrator (352 General Services). Once the administrator has created an ID and password for your TSM 'node,' you will be contacted via telephone with a message that your node ID is ready for pickup. For security reasons, TSM node IDs and passwords must be picked up in person at 302 General Services and you must provide picture identification.

## 2. Download and install a TSM client program.

Once you have your TSM node ID/password, you are ready to download a TSM client program from the CNS Backup Service website and install it on your workstation. Client programs, which include reason-

able online help, are available for the following operating systems: Windows 98 or later, Windows NT 4.0 or later, Mac OS 8.x, Mac OS 9.x, Mac OS X, AIX, SGI IRIX, Sun Solaris, HP-UX, Novell Netware, Linux86 and Linux 390.

## 3. Establish a Connection with the TSM server.

The first time you run your newly installed client program, you should use the TSM Client Configuration Wizard (a.k.a. the Setup Wizard) which is located in many client versions under the Utilities menu. The wizard helps you configure a TSM client options file on your computer, which communicates with the TSM server, and it helps you set up an automated backup schedule.

The setup wizard will prompt you for your TSM node name and password and the domain name of the CNS TSM server. The name for the CNS TSM server is:

`shuffle.ucs.ualberta.ca`

## 4. Perform a base-line backup of your workstation files and directories on the TSM server.

You can do this manually, or you can first set up a backup schedule and then TSM will perform the base-line backup without your intervention. (Before you do either of these, see the heading later in this article "Preparing for Your First Backup.")

## 5. Set up an automated backup schedule using the Client Configuration Wizard.

Once the scheduler is running, you don't have to do anything else, ever. Files on your workstation that have changed during the day are automatically backed up to the server overnight.

## Using the Client Program

The client programs contain two main components: the TSM Backup Client and the TSM Backup Scheduler (a third component, the TSM Web Client, is not supported by CNS at this time). The Backup Client programs are typical dialog box driven mini-applications which are geared to the novice user. They provide easy access to the basic backup and restore commands that you need to interact with the TSM server. However, users who prefer to work with a command-line interface have the option of using one which is included with the TSM client downloads. The command-line interface lets the

experienced user issue multifarious permutations of TSM commands, which, to be honest, are not at all needed by the average workstation owner.

The TSM backup client programs let you:

- Log on and off the TSM server; change your TSM backup/restore options and your node's password.
- Backup your entire workstation, including data files, programs, and system files; or you can narrow the scope of your backup by choosing directories and files to exclude from the backup operation (Figure 2).
- Backup data from peripheral storage devices, and from directories on mounted network drives.
- Get an estimate of the time needed to complete your backup/restore selections.
- Choose directories and files on the TSM server that you want to restore, and select where you want them to be restored on your workstation.
- Authorize another user to restore your files to their workstation.
- Set up an automated backup schedule with the TSM Backup Scheduler. Once the scheduler is running, your workstation is scheduled for backup once every 24 hours by default, during the evening or at night.
- Restore your workstation files from the server to a different workstation that has a TSM client installed. This is possible because TSM is only concerned with your node name and password, not your workstation's IP address or physical network location.

In addition, the TSM backup client programs support 56-bit data encryption, data compression, and archival/retrieval functions. However, these features come with the following caveats:

- While TSM supports data compression on the client side, by default TSM backups are compressed by the CNS tape robot, so you will gain minimal disk space, if any, by using compression on your desktop.
- If you do choose to compress your files and directories and also want to encrypt them, you should compress them first. If you encrypt first, the redundant patterns in your files are lost (such as the word 'and' in your text files) and there is really very little left for the compression engine to do.

Also note that TSM encryption may be somewhat risky in that it is up to the workstation owner to remember and protect their encryption key (password) which resides on the workstation alone. If the user forgets or inadvertently removes the encryption key, there is really nothing that CNS personnel can do

to assist in decryption and recovering the user data.

- Archival/retrieval functions are supported by TSM but CNS has concentrated its efforts on establishing a solid backup and restore service and is not able at this time to provide user support or guarantees for data archiving.

Archiving files is different from backing up files in that archive packages usually contain files that are no longer current on the workstation. Whereas the TSM backup service stores the two latest versions of an existing workstation file, and one version of a file that no longer exists on the workstation (for a period of sixty days only), TSM archive packages do not expire and are stored indefinitely. Remember that this has implications for a TSM node's disk quota.

### Preparing for Your First Backup

The easiest way to backup your workstation is to let TSM simply store the contents of your entire hard disk. This creation of a 'mirror' of your workstation is what will happen by default if you create a backup schedule with the TSM Client Configuration Wizard and then let TSM do your first base-line backup. However, if you're like me—and cringe at the thought of backing up an entire system with all its historical baggage, bugs and temp files—you really only want to backup your project files, your data files, and not the whole shebang of system folders, programs, registry files, etc. If this is where you're coming from, you will have to perform a couple of extra steps before your base-line backup.

For starters, you might want to re-arrange your directories/folders before you do the base-line backup. For example, you can move all of your project and data files into sub-directories within one directory, such as your My Documents folder. Then you can tell TSM to simply backup that one directory and exclude all others.

How do you do this? Exclusion of directories and files from the backup process is accomplished with TSM's Include-Exclude tool, found under the Preferences command in your TSM backup client program. The tool lets you browse your file system and exclude directories and files at will. Anything that is not explicitly excluded with the tool will be included in the backup.

To see the results of your backup, you can check a log file that the TSM server creates during every transaction with your workstation. By viewing the log file, you may find that some obscure system directories are being

backed up even though you have excluded their parent directories. Simply copy the directory paths that you don't want backed up from the log file into the Include-Exclude dialog box (Figure 2) and save your new settings. In this way, you can progressively whittle down and refine your workstation backup routine until you achieve the desired results. You will also have to remember to exclude directories that are created when you install new programs on your computer.

### Getting Help with TSM

For more information on TSM, call the CNS Help Desk at 492-9400 or check the CNS Backup Service website at:

[www.ualberta.ca/cns/backup](http://www.ualberta.ca/cns/backup) □

## Using CNS WebMail

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*CNS Help Desk* ([helpdesk@ualberta.ca](mailto:helpdesk@ualberta.ca))  
302 General Services Building

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CNS WebMail allows you to access your University e-mail account from anywhere in the world using a web browser. All you need is your CNS Campus Computing ID and password.

Unlike the Pine e-mail program on the GPU server complex, which uses keystrokes and a text-based interface, CNS WebMail easily sends and receives e-mail and attachments using the graphical interface of Internet Explorer or Netscape.

### How Do I Use WebMail?

Make sure your web browser is configured to accept cookies and run JavaScript, as CNS WebMail makes use of both. Most newer browsers will use both by default, but you may need to activate cookie and JavaScript functionality by changing the options in your browser's Preferences dialog box.

To access the CNS WebMail service, point your browser to:

[www.ualberta.ca/webmail](http://www.ualberta.ca/webmail)

You will be forwarded to a secure connection. This means that any data passed between your computer and the mail server is encrypted for your privacy. If your browser does not support secure connections, you will need to upgrade to a newer browser in order to use CNS WebMail.

Enter your CNS Campus Computing ID and password and click the Submit button. That's it! You're now ready to start reading and sending your e-mail.

### Deleted and Expired Mail

#### *Deleted Messages*

Although the WebMail program used by CNS supports the storing of deleted messages, this feature is disabled in CNS WebMail. The issue with keeping all deleted messages is global disk space utilization. Currently, each University employee has approximately 7 MB of disk space for e-mail folders other than the Inbox (on which there is no limit) and each student has approximately 5 MB for such e-mail folders. If you add to that the prospect of keeping all deleted messages for the entire University community of 35,000 plus, the disk space requirements rapidly become untenable.

Note that you can find out what your exact disk space quota is for e-mail folders by logging on to the CNS Profile Manager. Log on to the following website with your CNS Campus Computing ID:

[www.ualberta.ca/profile](http://www.ualberta.ca/profile)

Click on the E-Mail button to see your disk space quota.

So, if you delete a message in WebMail, it's gone for good (well, almost). It may be possible to retrieve a deleted message from CNS backup tapes, but only if the mail in question was in one of your folders when the system was backed up. If you receive a piece of mail, read it and then delete it right away, a backup of that piece of mail would not exist. Also note that as more time elapses, it is less likely that you will be able to retrieve messages from the tape backup system. As the system fills up, older data is deleted to make way for the new.

There is a \$55 per hour fee for retrieval of messages from backup tapes. If you need more information about possible retrieval of deleted messages, contact the CNS Help Desk at 492-9400.

As a workaround to the disabled Deleted Messages folder, you can create a folder yourself called Trash or whatever you like. Instead of deleting messages, move them into the new Trash folder. You will have to go in to this folder and clean it up from time-to-time. Keeping everything indefinitely is not an option because of your e-mail folder quota.

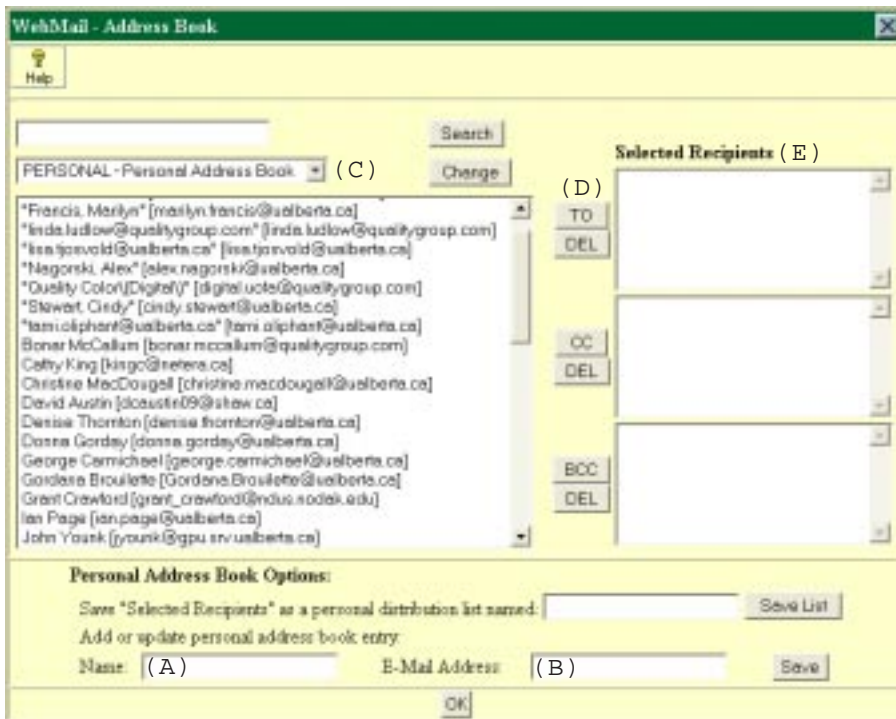


Figure 1 - CNS WebMail's address book interface.

**Expired Messages**

If you are missing some messages from your Inbox that you have not deleted, they may have been moved to your 'expired mail' folder. Mail left in your Inbox longer than thirty days is automatically archived to an expired mail folder. Thirty days after that, it is archived to tape, and after a third thirty-day period, it is permanently deleted.

If you want to retrieve mail from your thirty-day expired mail folder, you can do so from within WebMail by choosing 'Expired-mail' from the Folder drop-down list. If you don't see such a folder, it means that you don't have any expired mail.

In order to prevent mail in your Inbox from expiring in the future, process all messages as they come into your Inbox. Move them to folders you create. Don't just leave them sitting in the Inbox.

**WebMail's Address Book**

WebMail includes an address book in which you can store the e-mail addresses of your correspondents. Unfortunately, WebMail does not support the importing of address books from other e-mail programs, so you'll have to build your WebMail address book from scratch. Of course, the easiest way to build a WebMail address book is to click on the "Add to Address Book" button in the header of your new received messages, but you can also add addresses manually with the following procedure:

1. In WebMail, click the New button to compose a new message. The Create Message screen appears.
2. Click the Address button. You should see the screen shown in Figure 1.
3. To add an address to your Address Book, type the name of

- the person in the Name field (A).
4. Type the person's e-mail address in the E-Mail Address field (B).
5. Click the Save button and the e-mail address will appear in the large box on the left labelled Personal Address Book (C).
6. When you want to send a message to the newly added address, select it in the Personal Address Book by clicking on it once, then click the 'To' button (D). The address will now appear in the Selected Recipients box on the right of the screen (E).
7. To compose your message, click the OK button at the bottom of the screen. You return to the Create Message screen and your recipient's e-mail address is in the To field.

Note that you can also make a custom mailing list in WebMail so that you can send one message to a number of people at the same time:

1. Select multiple addresses from the Personal Address Book list as outlined above.
2. Go down to "Save Selected Recipients as a personal distribution list named:" and give this group of people a mailing list name.
3. Click the Save List button and the list name appears in the Personal Address Book list. You can now treat this mailing list as a normal single entry in your address book. When you send a message to the list name, a copy of the message goes to each person on the list. □

# Web Page Policies at the U of A

*Computing and Network Services*

As a publicly funded educational institution, the University of Alberta does not compete with commercial service providers, such as private sector web hosting companies. Therefore, an individual's use of CNS web hosting for other than academic or professional reasons, such as personal monetary gain, is strictly prohibited.

## Sponsorship and Advertising

- Web pages on University web servers may acknowledge the active sponsorship of corporations or individuals for continuing programs or specific events. It is acceptable to provide live hypertext links to the sponsors' commercial web pages.
- A sponsor is considered to be a major contributor and corporate partner of the University of Alberta. Sponsorship is based on a long-term commitment to the institution.
- The sponsor should be informed of the use of its corporate logo on a web page, and the use of the logo should maintain the integrity, visual identity, and word marks of the sponsor.
- The acknowledgement must be limited to a minor portion of the visual canvas of any single web page, so as not to over-shadow the primary web content, intent and essence of the page.
- The acknowledgements and links should be removed at the conclusion of the sponsorship or event.

## Commercial Advertisements

- Individual faculty offices should be made aware of the details of any arrangements made to use advertisements or other revenue generating functions on University resources.
- A web page or web page structure cannot be completely dedicated to the promotion of a commercial entity.
- The total advertisement space must be limited to a minor portion of the visual canvas of any single web page.
- The download time (and thus the byte-size) for advertisements must be limited to a minor portion of the total download time of any single web page.
- The nature of the commercial entity's goods or services should bear a relationship to the content of the web page.

## Endorsements

- The owners of University web pages should take care in recognizing the legal and moral ramifications of lending explicit or implied endorsement of commercial products or services.
- Endorsements and links to external sites should not infringe on the rights of others, or conflict with current University sponsors.
- Endorsements cannot dominate a web page.

## Mutual Link Promotion

- Mutual link promotion should be truly mutual—the level of prominence of the link/advertisement should be the same at both parties' sites.
- Agreements that contain residual payments, finders' fees, or royalties based on 'link traversals

per day' must be reported to the Development Office—they are to be treated as a paid commercial advertisement.

- Mutual link promotion must be limited to a minor portion of the visual canvas of any single web page.

## Official vs. Unofficial Non-Profit Web Pages

*Question:* Can I put the "Edmonton XYZ Society's Official Home Page" on the U of A web server? I hope you understand that the Edmonton XYZ Society is a non-profit organization and run entirely by volunteers. It is constantly on the brink of financial disaster which is a major reason why no commercial providers are involved with preparing or hosting the page. The society is quite similar to the Chamber Music Society and other Arts organizations which present events that are not carried out on a commercial basis.

*Answer:* The University of Alberta does not compete against the private sector, and an "Official Home Page" can most definitely be hosted by a commercial service provider, such as CompuSmart, Telus, etc.

Web space from a commercial service provider can be as cheap as \$15 per month. Some commercial Internet Service providers (ISPs) will even consider granting free space if they feel that it would increase their service's visibility, number of accesses, etc.

Whether your society is poor or not, if the website looks like or is an official home page, you may not host it on the University's web servers.



Therefore:

- The pages can be as pretty and detailed as you want, but you cannot say that the website is “Edmonton XYZ Society’s Official Home Page.”
- If the web page(s) are hosted on University resources, you may not say that it is operated by the Edmonton XYZ Society—it is operated by concerned individuals and volunteers who, as a labor of love, would like the world to know about the organization.
- Contact information on the website, such as telephone numbers, must refer to you and not the Edmonton XYZ Society. (You can still provide Society contact telephone numbers, its events, etc., “for information purposes only.”)
- Make many references to the fact that: “This unofficial site is operated by volunteers, and all copy and graphics are used by permission of the Edmonton XYZ Society.”

Basically, it’s a challenge in word-smithing. When it starts to look too commercial, it can’t be on our system. You also must comply with other University policies, especially limiting sales/commerce from a personal CNS Campus Computing ID.

In the long run, it is probably in the best interest of the non-profit organization to request a proper DNS entry from a commercial service provider (such as [www.EdmontonXYZSociety.org](http://www.EdmontonXYZSociety.org)), so that the site can be more easily found by web surfers.

Please e-mail questions about this policy to George Carmichael, Manager of CNS Client Services. □

## Core Activities of CNS

### *CNS Management Team*

*Note:* This article is an excerpt from the *CNS Four-Year Strategic Business Plan*. The full 55-page plan, including a resource plan, an annual budget and three-year forecasts, is available as a PDF file at:

[www.ualberta.ca/cns/planning/business-plan.pdf](http://www.ualberta.ca/cns/planning/business-plan.pdf)

CNS provides information and communications technology (ICT) services in support of all campus constituents. These services include:

- support for online learning (WebCT) and digital repositories (SunSITE Alberta)

- optical scoring, exam and survey design (on and off campus)
- support for public computer labs
- support of research computing, both on campus and nationally
- provision of Internet and intranet networks and supplying of computing IDs, e-mail accounts, web page hosting and other networking tools
- development and long term support for non-enterprise administrative systems
- telephone/voice mail systems

Clearly, operation of the physical infrastructure is only a part of the CNS function. User consulting and guidance is the largest part of our service and, of necessity, demands that we are familiar with clients’ problems.



CNS currently operates 40 computer labs on campus.

### Teaching and Learning

#### *WebCT (Web Course Tools)*

The University's production quality e-learning system based on WebCT is one of the most successful in the world. The system was inaugurated less than four years ago, driven by CNS in collaboration with academics. For the first 18 months of the initiative, no funding was provided by the University.

By September 2001, the WebCT environment supported over 1,000 courses with more than 100,000 plus student registrations (18 percent of all University courses and 45 percent of all student registrants). The environment supports courses in all faculties of the University.

In addition to managing the systems which support this application, the CNS WebCT support group has hosted over 40 professor-requested student orientation sessions (1,675 students), twenty-four instructional workshops (240 participants), five department specific sessions, and four graduate teaching assistant (GTA) sessions (150 participants).

#### *SunSITE Alberta*

This initiative provides students, researchers, instructors, and the general public with free access to several digital collections housed at the University, as well as to historical and cultural information, research projects, and free software.

SunSITE currently houses 17 projects in various stages of development, including nine faculty and departmental projects. The projects currently in production include:

- The Digital Teaching Resources Library sponsored by Biological Sciences



Some of the Sun hardware that CNS operates for the University's WebCT service.

- The Bridgland Repeat Photography Project sponsored by Anthropology
- The Beaver County mapping project sponsored by Renewable Resources
- The Virtual Museum spear-headed by Museums and Collections Services
- The Digital Spatial Library operated by the Data Library

#### **Optical Mark Reading**

The CNS Optical Mark Reading (OMR) Center automates the marking of multiple-choice exams and the analysis of professor appraisals.

The latter application produces important teaching effectiveness indicators for students and faculty.

The OMR Center has also been a highly respected resource for other institutions such as:

- The Provincial Student Evaluation Branch
- Grant MacEwan Community College
- Alberta Vocational College
- Apprenticeship Board
- University of Saskatchewan
- Chinese University of Hong Kong

The leader of the OMR group is consulted as an expert in implementation and effective operation/management of automated assessment methods and technologies.

### Instructional Computer Labs

The University is the leading educational institution in the province in terms of investment in computing laboratories. The institution has spent between \$1 million and \$2.5 million in lab infrastructure each year for the last five years, and, to regularly renew this infrastructure, expects to continue investment at \$1.3 million annually.

Currently CNS manages thirty-five PC labs, four Macintosh labs and one Unix lab, totaling over 1,100 machines.

A multi-disciplinary academic committee directs the priorities of CNS in this area. Prior to 1999, the committee was always headed by an academic, but since 1999 the committee has been chaired by the Director of CNS and the committee has fully supported the continuation of this arrangement. In recent times, the chairing has been shared by the Director of the Technical Resource Group (TRG) to reflect the convergence of TRG smart classrooms and CNS lab solutions as "instructional spaces."

### Research Computing Support

- The Research Computing support team provides services to campus, provincial and national researchers and organizations. The team provides researchers with computing resources to enhance research and strengthen the presentation of results. The group strives to provide the best and latest technology available.

- The Multimedia Advanced Computational Infrastructure (MACI) project is a collaborative computational resource-sharing initiative among four institutions: the Universities of Alberta, Calgary, Lethbridge and Manitoba. The project's goal is to create and maintain an advanced communication and computational infrastructure for university, government, and possibly private sector researchers.

MACI researchers are eligible for access to resources across the country, which are shared under the national advocacy organization for computational resources, C3.ca, utilizing the world's first national optical research and development network. The MACI SGI Origin supercomputers, operated by CNS, provide a top-rank research computing facility for this research community.

- The Beowulf Cluster, comprised of 50 dual-processors, is used to test grid technologies and provide computational power for numerical applications.
- Statistics and numerical servers running programs including Maple, SPSS, SAS, LISREL, Mathematica, MATLAB, ACSL, and IMSL are provided as a centrally funded service to all researchers on the campus.

### Client Services

- The CNS Help Desk (492-9400) provides person-to-person, telephone and online help facilities for all students and staff of the University. This includes the development of a CD-ROM to allow for easy access to the Internet from modem connections, the development of tutorials to assist clients with solutions to frequently asked questions,

and assistance with computer problems ranging from system configuration and corruption issues to application problems.

- The Client Outreach group provides client documentation and the CNS *Dispatch* newsletter, and manages the CNS booth used at public events. The group also handles negotiations for site-licensed software and operates CNS Product Sales.
- CNS provides systems and application support for client desktop machines and remote servers through the Unix and Microcomputer Technical Response groups. In addition, CNS works with clients in the evaluation and selection of high-end and server-class Unix systems. In relation to this function, CNS has developed resellers agreements with Sun Microsystems and IBM.

### Central Services Support

CNS provides 7 by 24-hour support to the campus through the Central Operations group. With the move to the web, life-long and distributed learning, the University systems must be available from anywhere at anytime.

This group is charged with monitoring all network routers and operating over 140 servers housed by CNS. It ensures that when outages occur, the correct people are brought in to repair damage or correct any problems.

Central systems and Internet applications support provides access to key University systems including backup services, file sharing, login to general-purpose computers, e-mail, web and FTP. CNS is also charged with security of computer IDs, central systems and information stored on the central servers.

### Database and Development Services

- The CNS Oracle group is charged with developing applications with large data and user requirements and negotiating and distributing the University's Oracle licences. The group provides primary Oracle support to administrative and research entities on the University campus. Supported systems include the University's corporate database, the Facilities and Operations utilities database, and internal CNS databases.
- As the use of database applications expands into research and administrative areas, the need

for a group which can react quickly to develop small specialized applications has arisen. In response, CNS has created the eXpress Applications group to fulfill these requirements.

### Communications Services

Although voice and data continue to converge, we are still some way from running a seamless voice/data network over the same infrastructure with guaranteed quality of service. While working closely together, the CNS network support (data) and telecom (voice) units operate as distinct functions in

ensuring the smooth flow of digital traffic within and beyond the boundaries of the campus.

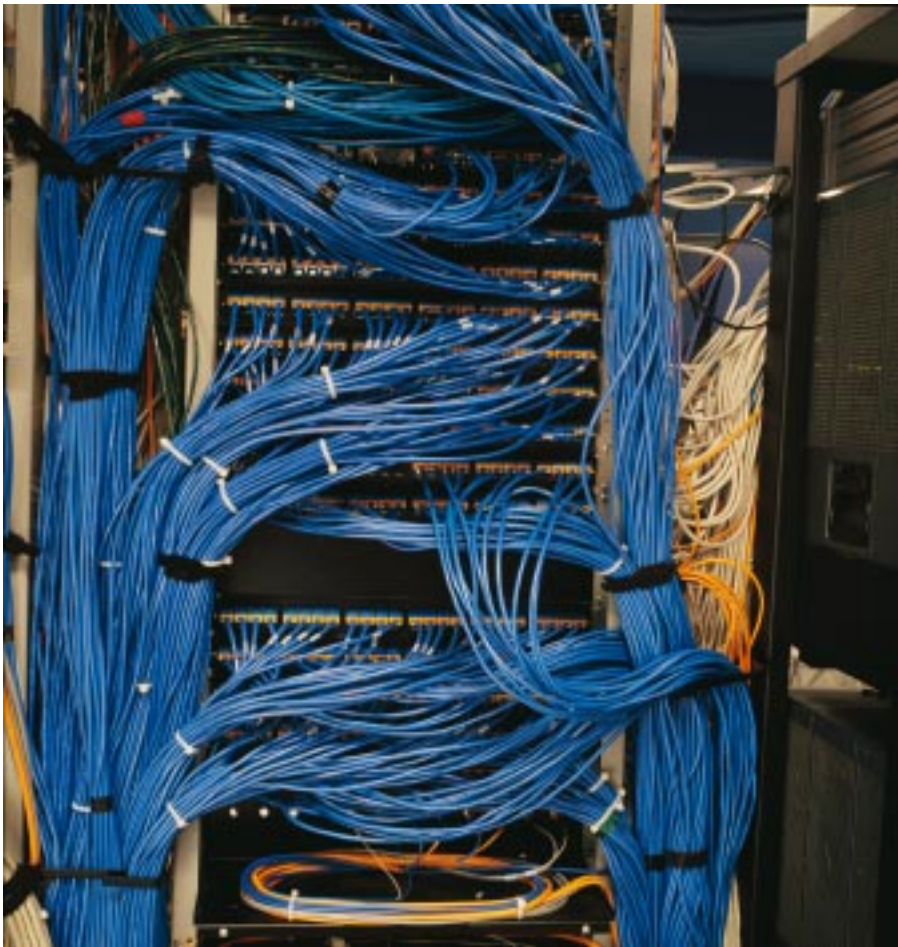
- Network support services provide network design, installation and management services to the University, including the management of the name services and monitoring of network traffic.

CNS provides network design and installation services which ensure that all network connections follow standards which will allow the University to move to new technologies as they are developed.

The University of Alberta's backbone network consists of a 100 megabit per second Ethernet over a 50 kilometer fiber optic network. The Ethernet is in the process of being upgraded to gigabit technologies, with the first three gigabit routers now in production. The management of these systems includes provisioning and monitoring the commercial and peered Internet connections, and the management of the University's modem pool.

CNS provides network management services for the provincial research network known as NeteraNet. NeteraNet connects Alberta research universities to the national CANet3 network.

- The CNS Telecom group, a cost-recovery unit, provides all telephone and voice mail services to the University of Alberta. In 2001, the University moved from the Centrex central office system provided by Telus to an in-house Nortel M1 telephone system and Avaya voice messaging system. □



The main patch panel in the CNS Computer Center connects CNS servers to the campus backbone network.

## Site-Licensed Software

*CNS Product Sales, 302 General Services Building (492-5442)*

Please note that the site-licensed software products and prices listed below are subject to change without notice. The latest software license information is available at:

[www.ualberta.ca/cns/site](http://www.ualberta.ca/cns/site)

Also note that most CNS site-licensed software is only available for University of Alberta departments and employees. Payment for software may be made with a University indent or a University corporate credit card.

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
<b>Apple Operating System</b>				
OS X 10.1 (new licence)	Macintosh	\$77	\$25	n/a
OS X 10.1 (upgrade from OS X)	Macintosh	n/a	\$20	n/a
System 9.0	Macintosh	\$65	\$10	n/a
<b>Authorware</b>				
Authorware 4.0	Windows, Macintosh	\$36	\$10	n/a
<b>Autodesk</b>				
ACES 2002 4.0	Windows	\$250	n/a	September 30, \$250
Studio Max Pack Release 4	Windows	\$190	n/a	September 30, \$190
Actrix Technical R-2000	Windows	\$60	n/a	n/a
<b>AntiViral Toolkit Pro</b>				
AVP 3.0132	Windows	n/a	\$10	March 14, 2003
<b>Borland/Inprise</b>				
C++ Builder 6 Enterprise	Windows	\$72	\$15	December 30, \$30
C++ Builder 5 Professional	Windows	\$60	\$15	December 30, \$30
C ++ Builder 4 Standard	Windows	\$60	\$10	December 30, \$30
C ++ Builder 3 Standard	Windows	\$60	\$10	December 30, \$30
Delphi 6 Enterprise Scholar	Windows	\$120	\$15	December 30, \$30

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
Delphi 5 Enterprise	Windows	\$120	\$20	December 30, \$30
Delphi 4 Professional	Windows	\$60	\$25	December 30, \$30
JBuilder 5 Enterprise Scholar	Windows, Linux, Solaris	\$72	\$15	December 30, \$30
JBuilder 4 Enterprise	Windows	\$72	\$15	December 30, \$30
JBuilder 4 Professional	Windows	\$72	\$15	December 30, \$30
JBuilder 3.5 Enterprise	Windows, Linux, Solaris	\$72	\$15	December 30, \$30
JBuilder 3 Enterprise	Windows	\$72	\$20	December 30, \$30
JBuilder 3 Enterprise	Solaris	\$72	\$10	December 30, \$30
JBuilder 3 Professional	Windows	\$72	\$20	December 30, \$30
Kylix v. 2.0 Enterprise Edition	Linux	\$72	\$15	December 30, \$30
Kylix Server Edition Scholar	Linux	\$72	\$15	December 30, \$30
Pascal with Objects 7	DOS/Windows 3.x	\$48	n/a	December 30, \$30
Turbo Assembler 4	DOS	\$42	n/a	December 30, \$30
Turbo C ++ Visual Edition 3.1	Windows 3.1	\$48	n/a	December 30, \$30
Turbo C ++ 3	DOS	\$48	n/a	December 30, \$30
Turbo Pascal 7.0	DOS	\$48	n/a	December 30, \$30
Turbo Pascal 1.5	Windows 3.1	\$48	n/a	December 30, \$30
Visual dBase 7 Professional	Windows	\$60	\$10	December 30, \$30
<b>ESRI</b>				
ArcIMS 3.1	Windows	\$250	n/a	October 15, \$125
ArcInfo 8.1	Windows, Unix	\$2,500 per server; \$550 per stand-alone computer; \$250 per computer with server access	n/a	October 15 - \$2,500 per server; \$550 per standalone computer; \$250 per computer with server access

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
ArcView 8.1	Windows, Unix	\$250 per standalone computer; \$150 per computer with server access	n/a	October 15 - \$250 per standalone computer; \$150 per computer with server access
Map Objects 2.0	Windows	\$100	n/a	October 15, \$50
<b>Fujitsu Fortran</b>				
Fortran C/C ++ Express	Solaris, Linux	\$260	n/a	n/a
<b>Ghost</b>				
Ghost 7.5 (individual licence)	Windows	\$12 per ghosted computer	\$10	August 14, \$12 per computer
Ghost 7.5 (lab licence - 10 or more copies)	Windows	\$7 per ghosted computer	\$10	August 14, \$7 per computer
<b>Hummingbird Exceed</b>				
Exceed 7.1	Windows	\$180	\$10	\$40
Exceed 5.3	Windows 3.1	\$180	\$10	\$40
<b>HyperStudio</b>				
HyperStudio 3.0	Windows 3.1	\$85	\$10	n/a
HyperStudio 3.1	Macintosh	\$85	\$10	n/a
<b>Maple</b>				
Maple 7.0	Windows, Macintosh, Unix	\$100 per user or system	\$10	March 31, \$50
<b>Mathematica</b>				
Mathematica 4.1	Windows, Macintosh, Unix, Linux	\$200	\$10	pending
<b>MATLAB</b>				
MATLAB Release 12.1 (Server Access)	Windows, Unix, Linux	\$125 per computer with server access	\$15	August 1, \$125 per computer with server access

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
MATLAB Release 12.1 (Local Installation)	Windows, Unix, Linux	\$250 per computer	\$15	August 1, \$250
MATLAB Release 5.2.1 (Local Installation)	Macintosh	\$250 per computer	\$15	August 1, \$250

**MINITAB**

MINITAB Release 13.30	Windows	\$53	\$10	August 31, \$45
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Software	Platform(s)	Licence Fee	Media Fee	Optional Software Assurance
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**MS Office (Suites)**

Office XP Developer	Windows	\$182	\$40	\$53
Office XP Professional	Windows	\$90	\$20	\$26
Office XP Professional + FrontPage	Windows	\$114	\$25	\$33
Office XP Standard	Windows	\$76	\$20	\$22
Office 2000 Developer	Windows	\$182	\$33	\$53
Office 2000 Professional	Windows	\$90	\$15	\$26
Office 2000 Standard	Windows	\$76	\$10	\$22
Office 97 Standard	Windows	\$76	\$10	\$22
Office 10	Macintosh	\$86	\$10	\$25
Office 2001	Macintosh	\$86	\$10	\$25
Office 98	Macintosh	\$86	\$33	\$25

**MS Office (Standalone Programs)**

Access 2002	Windows	\$50	\$10	\$14
Access 2000	Windows	\$50	\$10	\$14
Excel 2002	Windows	\$50	\$10	\$14
Excel 2000	Windows	\$50	\$10	\$14
FrontPage 2002	Windows	\$62	\$10	\$18
FrontPage 2000	Windows	\$62	\$15	\$18



Software	Platform(s)	Licence Fee	Media Fee	Optional Software Assurance
PowerPoint 2002	Windows	\$50	\$10	\$14
PowerPoint 2000	Windows	\$50	\$33	\$14
Publisher 2002	Windows	\$55	\$15	\$16
Publisher 2000	Windows	\$55	\$15	\$16
Word 2002	Windows	\$50	\$33	\$50
Word 2000	Windows	\$48	\$33	\$14
Excel 10	Macintosh	\$50	\$10	\$14
PowerPoint 10	Macintosh	\$50	\$10	\$14
Word 10	Macintosh	\$50	\$33	\$14
<b>MS Operating Systems</b>				
Windows XP Professional	PC	\$96	\$15	\$28
Windows 2000 Advanced Server	PC	\$655	\$15	\$165
Windows 2000 Server	PC	\$168	\$15	\$42
Windows 2000 Server Internet Connector	PC	\$1,090	\$33	\$270
Windows Terminal Services Client Licences 2000	PC	\$59 per workstation	n/a	\$15
Windows 2000 Professional	PC	\$96	\$15	\$28
Windows 2000 Client Program	PC	\$9 per workstation	n/a	\$2
Windows NT Server Enterprise 4.0	PC	\$655	\$15	\$165
Windows NT Server 4.0	PC	\$158	\$15	\$40
Windows NT 4.0 Client	PC	\$9 per workstation	n/a	\$2
Windows NT 4.0 Workstation	PC	\$96	\$15	\$28
Windows 98 Second Edition	PC	\$96	\$10	\$28
<b>MS Servers</b>				
Exchange Server 2000 Enterprise Edition	PC	\$1,800	\$15	\$450

Software	Platform(s)	Licence Fee	Media Fee	Optional Software Assurance
Exchange Server 2000 Standard Edition	PC	\$500	\$15	\$125
Exchange Server 5.5 Enterprise Edition	PC	\$1,800	\$33	\$450
Exchange Client	PC	\$4 per workstation	n/a	\$1
SQL Server 2000 Developer Edition	PC	\$325	\$33	\$80
SQL Server 2000 Enterprise Edition	PC	\$4,380	\$20	\$1,090
SQL Server 2000 Standard Edition	PC	\$455	\$20	\$115
SQL Server 2000 Client Program	PC	\$48 per workstation	n/a	\$12
SQL Server 7.0 Enterprise Edition	PC	\$4,380	\$33	\$1,090
SQL Server 7.0 Standard Edition	PC	\$455	\$33	\$115
System Management Server 2.0	PC	\$158	\$15	\$39
System Management Server 2.0 Client Program	PC	\$12 per workstation	n/a	\$3
<b>MS Programming Tools</b>				
Visual Studio.NET Enterprise Architect 2002	Windows	\$230	pending	n/a
Visual Studio.NET Enterprise Development 2002	Windows	\$215	pending	n/a
Visual Studio.NET Pro 2002	Windows	\$82	\$30	n/a
Visual FoxPro 7.0	Windows	\$57	\$25	n/a
Visual SourceSafe 6.0	Windows	\$41	\$10	n/a
<b>MS - Other Software</b>				
Interix 2.2	Windows NT	\$55	\$10	n/a
MapPoint 2002	Windows	\$118	pending	\$34
Outlook 2002	Windows	\$22	\$10	n/a
Project Professional 2002	Windows	\$115	pending	\$33
Project 2002	Windows	\$70	pending	\$20

Software	Platform(s)	Licence Fee	Media Fee	Optional Software Assurance
Project 2000 (licensed under Project 2002)	Windows	\$70	pending	\$20
Project Server 2002	Windows	\$105	pending	\$26
Project Server 2002 Client	Windows	\$20	n/a	\$5
Proofing Tools 2002	Windows	\$22	\$10	n/a
Visio Enterprise Network Tools (with Software Assurance)	Windows	\$615	\$10	included
Visio 2002 Professional	Windows	\$80	\$10	\$23
Visio 2002 Standard	Windows	\$33	\$10	\$9
Data Analyzer 2002	Windows	\$86	\$10	\$25

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
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**Numerical Algorithms Group**

NAG software for a single workstation	Windows, Unix	\$450	n/a	July 1, \$450
NAG software for a lab (unlimited stations)	Windows, Unix	\$740	n/a	July 1, \$740
NAG software for a department (unlimited users)	Windows, Unix	\$740	n/a	July 1, \$740

**Norton Anti-Virus**

Norton Anti-Virus Corporate Edition 7.6	Windows, Macintosh, Unix, Exchange, Novell	\$22	desktop - \$15; desktop/server - \$20	\$12
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**Novell Netware 6.0**

5 user	Windows	upon request	n/a	June 30 - \$170
25 user	Windows	upon request	n/a	June 30 - \$750
50 user	Windows	upon request	n/a	June 30 - \$1,500
100 user	Windows	upon request	n/a	June 30 - \$2,950

**Novell StandBy Server 5.3**

StandBy Server 5.3 (Many-to-One)	Windows	pending	n/a	June 30 - \$950
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<b>Software</b>	<b>Platform(s)</b>	<b>Licence Fee</b>	<b>Media Fee</b>	<b>Annual Renewal</b>
<b>SAS</b>				
SAS 8.2	Windows	\$115	\$36	April 15, \$70
SAS 6.12	Macintosh	\$115	\$11	April 15, \$70
SAS 8.2	Sun, RS/6000	pending	n/a	April 15, TBA
<b>SigmaPlot</b>				
SigmaPlot 2001	Windows	\$130	\$10	October 15, \$75
<b>SGI</b>				
SGI Varisty Program Package	Irix 6.5.13	\$620	n/a	June 15, \$140
<b>SHAZAM</b>				
SHAZAM PRO 9.0	Windows	\$9	\$10	\$25
SHAZAM PRO 9.0 (lab price for 20 or more copies)	Windows	\$5	\$10	n/a
SHAZAM 8.0	DOS, Windows, PowerMac, Linux	\$8	n/a	n/a
SHAZAM 7.0	Macintosh, Mac II, Mac SE/30	\$8	n/a	n/a
<b>SPSS</b>				
SPSS 11.0	Windows	\$60	\$10	December 31, \$40
SPSS 10.0	Mac OS X	\$60	\$10	December 31, \$40
AMOS 4.0.1 (for SPSS licence holders only)	Windows	n/a	\$10	n/a
ANSWERTREE 3.0 (for SPSS licence holders only)	Windows	n/a	\$10	n/a
<b>Sun</b>				
Sun Right-to-Use Package	Solaris 8	\$85 per computer	n/a	June 15, \$85
<b>SYSTAT</b>				
SYSTAT 10	Windows	\$90	\$10	September 30, \$50
<b>Timbuktu</b>				
Timbuktu Pro 2000 Build 853	Windows	\$55	\$10	December 15, \$40

Software	Platform(s)	Licence Fee	Media Fee	Annual Renewal
Timbuktu Pro 6.0	Macintosh OS X	\$55	\$10	December 15, \$40
Timbuktu Pro 5.2.4	Macintosh OS 8.1 to 9.2	\$55	\$10	December 15, \$40
<b>WebTerm X/Exodus</b>				
WebTerm X 4.0	Windows	\$190	\$10	\$50
Exodus 8.0	Macintosh	\$190	\$10	\$50
<b>WinZip</b>				
WinZip 8.1	Windows	\$8	\$10	n/a
WinZip 8.0	Windows	\$8	n/a	n/a
WinZip 7.0	Windows	\$8	n/a	n/a
WinZip 6.3	Windows 3.1	\$8	n/a	n/a
<b>X-Win</b>				
X-Win 32 5.1	Windows	\$36	\$10	\$25
<b>ZoneAlarm</b>				
ZoneAlarm Pro 2.6.88	Windows	\$40	\$10	\$15

## Cyber-Plagiarism Guide for Faculty

*Tami Oliphant* (tami.oliphant@ualberta.ca)  
University of Alberta Libraries

Although plagiarism is nothing new, the Internet has significantly increased opportunities for this practice. The proliferation of online publications and paper mills has drawn the attention of university administrators. They are facing challenges such as a doubling number of academic fraud cases, and studies suggest that a large percentage of university students may have committed some form of academic fraud like plagiarism.

A *Faculty Guide to Cyber-Plagiarism*, a website designed by the University of Alberta Libraries, is devoted to the exploration of cyber-plagiarism and plagiarism. Specifically, the website addresses steps that faculty can take to prevent, detect, and report plagiarism. The aim of the website is to provide effective, concrete, and practical strategies that faculty can utilize when dealing with plagiarism and academic fraud. In addition, the site:

- explores the different types of plagiarism and why students plagiarize
- provides links to popular paper mills
- has an extensive list of recommended resources
- offers search tips and links to detection services

The URL of the Cyber-Plagiarism site is:

[www.library.ualberta.ca/guides/plagiarism](http://www.library.ualberta.ca/guides/plagiarism) □

## Centrally Supported PC and Macintosh Computer Labs

### PC Labs

Arts 1-09	50 Pentium III/1 Ghz
Bio Sci CW213	25 Celeron/533 Mhz
Bio Sci CW403	24 Celeron/466 Mhz
Business B-18	32 Pentium III/700 Mhz
Business B-24	43 Pentium III/1 Ghz
Business B-28	49 Pentium III/1 Ghz
Cameron 1-20G	29 Pentium III/1 Ghz
Cameron B-05	26 Pentium II/233 Mhz
Central Academic 331	30 Pentium II/300 Mhz
Central Academic 335	30 Pentium II/300 Mhz
Central Academic 341	30 Pentium II/300 Mhz
Central Academic 345	30 Pentium II/300 Mhz
Chem/Min Eng 244	29 Pentium III/1 Ghz
Civ/Elect Eng 104	35 Pentium III/700 Mhz
Civ/Elect Eng 110	20 Pentium III/700 Mhz
Clin Sci 1-139	24 Pentium II/440 Mhz
Corbett Hall 2-11	25 Celeron/400 Mhz
Coutts L-110	18 Pentium III/1 Ghz
Dent Pharm 4064	12 Pentium II/400 Mhz
Dent Pharm 4066	22 Pentium II/350 Mhz
Education North 3-110	26 Pentium III/450 Mhz
Extension Center 3-06	24 Pentium III/1 Ghz
Faculté Saint-Jean 131	38 Pentium II/266 Mhz
Faculté Saint-Jean 133	23 Pentium II/233 Mhz
Gen Serv 221	24 Pentium III/1 Ghz
Gen Serv 866	32 Pentium II/350 Mhz
Industrial Design 1-02	23 Pentium III/1 Ghz
Knowledge Common	107 Pentium III/550 Mhz
Law W-104	22 Celeron/400 Mhz
Mech Engineering 3-3	36 Pentium III/500 Mhz
Phys Ed E-121B	18 Pentium II/440 Mhz
Rutherford 2-03	30 Celeron/466 Mhz
Rutherford 2-05A	16 Celeron/466 Mhz
Tory B-39	29 Pentium III/450 Mhz
WMC 2F1.02	19 Pentium III/700 Mhz

### Macintosh Labs

Education North 3-108	(grad students only)
	22 Power Mac G4/450 Mhz
Education South 1-55A/B	44 Power Mac G4/450 Mhz
Fine Arts 1-7	23 Power Mac G4/450 Mhz

## CNS Campus Computing IDs

University faculty, staff and students are eligible for CNS Computing IDs (which provide access to the GPU Logon Server, the modem pool service, etc.). To get a CNS Computing ID, pick up a registration form at CNS Product Sales, 302 Gen Serv (492-5442), and have it authorized by your department's financial authority. Then mail the completed form to *CNS ID Registration, 352 Gen Serv*. Applicants must provide photo ID when picking up CNS IDs and passwords at 302 Gen Serv.

## Help Desk and Product Sales

The Help Desk (492-9400) in 302 Gen Serv offers computing problem resolutions. Product Sales (492-5442), also in 302 Gen Serv, is the place to go for CNS Computing IDs and to pick up poster plots and CNS-provided software. The Help Desk and Product Sales are open weekdays from 8:30 am to 4:30 pm.

## Modem Pools

CNS Main Modem Pool	2,400 - 28,800 bps	492-3214
CNS Express Modem Pool	2,400 - 28,800 bps	492-3110
Telus Modem Access Service	(phone 441-2244 for subscription info)	

## Servers and Network Addresses

CNS WebMail	<a href="http://www.ualberta.ca/webmail">www.ualberta.ca/webmail</a>
Help Desk Mailbox	<a href="mailto:helpdesk@ualberta.ca">helpdesk@ualberta.ca</a>
CNS Services Newsgroup	<a href="mailto:ualberta.cns.services">ualberta.cns.services</a>
CNS Home Page	<a href="http://www.ualberta.ca/cns">www.ualberta.ca/cns</a>
Electronic HelpDesk	<a href="http://www.ualberta.ca/help">www.ualberta.ca/help</a>
CNS Profile Manager	<a href="http://www.ualberta.ca/profile">www.ualberta.ca/profile</a>
Campus Directory	<a href="http://ldap.srv.ualberta.ca/search">ldap.srv.ualberta.ca/search</a>
Web Support Page	<a href="http://www.ualberta.ca/websupport">www.ualberta.ca/websupport</a>
Internet Software Page	<a href="http://www.ualberta.ca/cns/software">www.ualberta.ca/cns/software</a>
Virus Information Page	<a href="http://www.ualberta.ca/cns/virus">www.ualberta.ca/cns/virus</a>
WebCT Home Page	<a href="http://www.ualberta.ca/webct">www.ualberta.ca/webct</a>
GPU Logon Server	<a href="http://gpu.srv.ualberta.ca">gpu.srv.ualberta.ca</a>
NetNews Server	<a href="http://news.srv.ualberta.ca">news.srv.ualberta.ca</a>
Anonymous FTP Server	<a href="http://ftp.srv.ualberta.ca">ftp.srv.ualberta.ca</a>
Statistical Server	<a href="http://stats.srv.ualberta.ca">stats.srv.ualberta.ca</a>
Numerical Server	<a href="http://num.srv.ualberta.ca">num.srv.ualberta.ca</a>
Time Server	<a href="http://time.srv.ualberta.ca">time.srv.ualberta.ca</a>
DNS Servers	129.128.5.233, 129.128.76.233
U of A Postmaster	<a href="mailto:postmaster@ualberta.ca">postmaster@ualberta.ca</a>

Please mail subscription changes to:

**Computing and Network Services**  
352 General Services Building  
University of Alberta  
Edmonton, Alberta, CANADA  
T6G 2H1

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